

Page 51, line 12, after "skill", please insert -- in the art --.

IN THE ABSTRACT:

Page 59, line 5, please delete "residue" and insert -- residues --.

IN THE CLAIMS:

Please cancel Claims 1 - 36 without prejudice. Please amend Claim 37 and add new Claims 38 - 55, as follows.

37. (Once Amended) An apparatus for processing a semiconductor wafer in a processing chamber, said [chamber having deposits formed therein,] apparatus comprising:

a gas panel coupled to said processing chamber;

an antenna proximate to said processing chamber;

a power supply coupled to said antenna; and

a controller, coupled to said antenna and said gas panel, said controller containing a computer readable storage medium having program code embodied therein, said program code for controlling the apparatus in accordance with the following:

(a) loading a substrate into [the] a processing chamber [a substrate having a material deposited thereon] having deposits on chamber surfaces which were generated during processing of a previous substrate;

(b) [flowing from the gas panel to the processing chamber a first gaseous composition;]  
conducting an etch process on said loaded substrate which simultaneously removes at least a portion of said deposits from said chamber surfaces during said etch, wherein a plasma source gas used to generate an etchant plasma is furnished to said processing chamber via said gas panel, and wherein

said power supplied to generate and maintain said plasma is furnished to said processing chamber by said power supply coupled to said antenna; and

(c) controlling said power supply to provide energy to said antenna proximate to said processing chamber, thereby effecting the removal of said deposits from said chamber surfaces [ thereby providing energy to said chamber to form a first plasma from said first gaseous composition introduced into said chamber so that said first plasma removes said layer formed on said substrate and said deposits;

(d) flowing from the gas panel to the processing chamber a second gaseous composition; and

(e) controlling said power supply to provide energy to said antenna thereby providing energy to said chamber to form a second plasma from said second gaseous composition introduced into said chamber so that said second plasma removes a portion of said substrate and forms deposits in said processing chamber ].

38. (New) The apparatus of Claim 37, wherein said etch process is a plasma etch process.

39. (New) The apparatus of Claim 38, wherein said etch process comprises plasma etching a layer of silicon nitride formed on said substrate.

40. (New) The apparatus of Claim 39, wherein said plasma source gas comprises a fluorine-containing compound and a bromine-containing compound.

41. (New) The apparatus of Claim 40, wherein said fluorine-containing compound is  $\text{SF}_6$ .

42. (New) The apparatus of Claim 40, wherein said bromine-containing compound is  $\text{HBr}$ .

43. (New) The apparatus of Claim 37, wherein said previous substrate comprises silicon, and wherein said processing of said previous substrate comprises plasma etching said silicon substrate, whereby a portion of said silicon substrate is removed.

44. (New) The apparatus of Claim 43, wherein plasma etching of said silicon substrate is performed using a plasma source gas comprising a halogen-containing compound and oxygen.

45. (New) The apparatus of Claim 44, wherein said halogen-containing compound is HBr.

46. (New) The apparatus of Claim 43, wherein said processing of said previous substrate comprises plasma etching an upper portion of a trench in said silicon substrate using a plasma source gas comprising a fluorine-containing compound and oxygen.

47. (New) The apparatus of Claim 43, wherein etching of said silicon substrate is performed using a plasma source gas which includes at least three reactive gases which include at least one fluorine-containing compound which does not contain silicon, at least one silicon-containing compound, and oxygen.

48. (New) The apparatus of Claim 47, wherein a volumetric ratio of said at least one fluorine-containing compound which does not contain silicon to said at least one silicon-containing compound ranges from about 100:1 to about 1:10.

49. (New) The apparatus of Claim 46, wherein said processing of said previous substrate further comprises plasma etching a lower portion of said trench in said silicon substrate using a plasma source gas which includes at least three reactive gases which include at least one fluorine-containing compound which does not contain silicon, at least one silicon-containing compound, and oxygen.

50. (New) The apparatus of Claim 47, wherein said silicon-containing compound is selected from the group consisting of  $\text{SiF}_4$ ,  $\text{Si}_2\text{F}_6$ ,  $\text{SiHF}_3$ ,  $\text{SiH}_2\text{F}_2$ ,  $\text{SiH}_3\text{F}$ ,  $\text{Si}_2\text{OF}_6$ ,  $\text{SiCl}_2\text{F}_2$ ,  $\text{SiClF}_3$ , and combinations thereof.

51. (New) The apparatus of Claim 49, wherein said silicon-containing compound is selected from the group consisting of  $\text{SiF}_4$ ,  $\text{Si}_2\text{F}_6$ ,  $\text{SiHF}_3$ ,  $\text{SiH}_2\text{F}_2$ ,  $\text{SiH}_3\text{F}$ ,  $\text{Si}_2\text{OF}_6$ ,  $\text{SiCl}_2\text{F}_2$ ,  $\text{SiClF}_3$ , and combinations thereof.

52. (New) The apparatus of Claim 47, wherein said silicon-containing compound does not contain fluorine and is selected from the group consisting of  $\text{SiBr}_4$ ,  $\text{SiHBr}_3$ ,  $\text{SiH}_2\text{Br}_2$ ,  $\text{SiH}_3\text{Br}$ ,  $\text{SiCl}_4$ ,  $\text{SiHCl}_3$ ,  $\text{SiH}_2\text{Cl}_2$ ,  $\text{SiH}_3\text{Cl}$ ,  $\text{Si}_2\text{Cl}_6$ ,  $\text{SiH}_4$ ,  $\text{Si}_2\text{H}_6$ ,  $\text{Si}_3\text{H}_8$ ,  $\text{Si}_4\text{H}_{10}$ ,  $\text{SiH}_2\text{I}_2$ ,  $\text{SiH}_2\text{I}$ ,  $\text{C}_4\text{H}_{12}\text{Si}$ ,  $\text{Si}(\text{C}_2\text{H}_3\text{O}_2)_4$ , and combinations thereof.

53. (New) The apparatus of Claim 49, wherein said silicon-containing compound does not contain fluorine and is selected from the group consisting of  $\text{SiBr}_4$ ,  $\text{SiHBr}_3$ ,  $\text{SiH}_2\text{Br}_2$ ,  $\text{SiH}_3\text{Br}$ ,  $\text{SiCl}_4$ ,  $\text{SiHCl}_3$ ,  $\text{SiH}_2\text{Cl}_2$ ,  $\text{SiH}_3\text{Cl}$ ,  $\text{Si}_2\text{Cl}_6$ ,  $\text{SiH}_4$ ,  $\text{Si}_2\text{H}_6$ ,  $\text{Si}_3\text{H}_8$ ,  $\text{Si}_4\text{H}_{10}$ ,  $\text{SiH}_2\text{I}_2$ ,  $\text{SiH}_2\text{I}$ ,  $\text{C}_4\text{H}_{12}\text{Si}$ ,  $\text{Si}(\text{C}_2\text{H}_3\text{O}_2)_4$ , and combinations thereof.